

REMARKS

Claim amendments

Applicants have cancelled the claims that were not elected in response to the restriction requirement. The claims are cancelled without prejudice to filing one or more divisional applications.

New claims 20 and 21 are added to more completely claim the invention. The new claims are readable on Species 1 of Group 1, which was elected for prosecution in the response to the restriction requirement.

Claim 2 is amended to more clearly point out the invention of claim 2.

Claims 1, 4 and 5 are amended to overcome the § 112 rejection of these claim.

Drawing objection

The Examiner objected to the drawings submitted on filing under 37 C.F.R. § 1.83(a). Applicants have submitted a new set of formal drawings. The drawings make no substantive change to the drawing figures other than rendering the original informal drawings in formal fashion. The drawings as filed (and the replacement drawings) show every feature of the claims, as will be explained below. Approval of the drawings and withdrawal of the objection is requested.

The Examiner states that the original drawings did not show the following features of the claims:

1) the carrier – this is the structure 200 shown in Figures 7-15 which holds the test sample devices (cards 100 in Figure 7). See Specification, pages 20-21.

2) the slide - this is the cylindrical guide member 1008 shown in Figure 29. The claim has been amended to replace “slide” with “guide”, which is the term recited at page 35 line 20.

3) the “first surface of the block” – this is the bearing surface 1060 (Figures 31 and 32) which makes contact with the carrier and serves to urge the carrier along as the drive block 1004 moves towards the front of the instrument. See page 38 lines 21-23. The lift pins 1012 (Figure 29) serve as a feature to engage the carrier and allow the carrier to be dragged over the wear strips when the carrier is moved in the opposite direction. See page 37 line 23 to page 38 line 2; page 35 lines 11- page 36 line 21. Thus, the structure of claim 3 is shown in the drawings.

Accordingly, all claimed features are shown in the drawings the drawing objection should be withdrawn.

§ 112 rejections

Claim 1

The examiner rejected claim 1 as it was unclear what elements actually access the plurality of processing stations, as recited at lines 9 and 10. The claim has been amended to recite “wherein said test sample devices access said plurality of processing stations ~~are accessed~~ as said carrier is moved along said path . . .”. This makes it clear that the test sample devices access the processing stations. The rejection of claim 1 should be withdrawn.

Claim 4

The Examiner states that the structural relationship between the fixed front bearing mount receiving the second end of the shaft, and the block receiving the threaded shaft of claim 4 is not clear.

Applicants are claiming in claim 4 the preferred embodiment shown in Figures 29-32. As shown in Figure 29, the bearing mount (1020 in the drawings) is the structure which supports the second end of the shaft (1010 in the drawings) – the opposite end from the end from the servomotor (1006) which drives the shaft. The applicants have amended the limitation related to the threaded member (1005 in the drawings) to recite a threaded member “fixed with respect to said block receiving said threaded shaft between the first and second ends thereof.” Thus, the threaded member is intermediate the ends of the shaft – the bearing is at one end and the servomotor is at the other end, and the threaded block receives the shaft between the first and second ends. This is what is shown in Figure 29, 30 and 32. The structural relationship is not only clear from the language itself, it is also clear by the recitation that “as said shaft rotates within said threaded member, said block is slid along said guide [1008 in the drawings] to thereby move said block between said first and second ends of said path.” This is exactly what is described in the patent specification and shown in the drawings.

The Examiner also questions how the bearing mount is related to the block, or how this element, or the threaded member, is related to the rest of the elements. The bearing mount is related to the shaft – it receives the second end of the shaft. The rest of the elements are related to each other as necessary to explain the structure of the preferred embodiment. Furthermore, the threaded member is fixed with respect to the

block 1004 and receives the threaded shaft between the first and second ends thereof. Nothing else is necessary to recite the structural relationships. The applicants therefore request withdrawal of the rejection.

Claim 5

The Examiner rejected claim 5 for failing to recite an adequate structural relationship between the wear strips and the rest of the elements of claim 1. Claim 5 has been amended to recite that the wear strips are “positioned along the longitudinal path” which is recited in claim 1. Furthermore the claim states that the strips provide “a bearing surface for said carrier as said carrier is moved along said path between said first and second ends.” The applicants submit that the claim adequately relates the wear strip to the two relevant aspects of claim 1 – the longitudinal path and the carrier. Nothing else is deemed necessary in order to comply with § 112.

§ 102 Rejection

Claims 1-4 stand rejected by Karl et al., U.S. patent 5,891,396 (hereafter “Karl”). The rejection should be withdrawn because the position tracking features of claim 1 are not shown in Karl.

As recited in claim 1, there are two tracking features which cooperate to keep track of the location of the carrier within the sample testing machine – 1) a position tracking feature which is formed in the carrier (part (a) of claim 1) and 2) “at least one carrier position tracking sensor placed along said path detecting the position tracking

feature on said carrier as said carrier is moved along said path” (part (c) of claim 1).

These features are not shown in Karl.

In particular, the Karl patent discloses the use of stepper drive motors 48 which are coupled to a collar 40 via a belt. A paddle 48 is mounted to the collar. In the system of the Karl patent, the system keeps track of the position of the collar and paddle (and thus the sample carrier “boat” 22 (Figure 6 of Karl)) by counting “steps” of the stepper motor. Stepper motors are brushless motors which can divide a full rotation of the motor into a large number of angular steps, for example, 200 steps. Thus, the motor can be turned to a precise angle. For example, in the Karl patent, particular number of steps (motor rotation) can be converted to an amount of linear travel, e.g., count 300 steps and theoretically the sample “boat” of the Karl patent will have moved to position for diluting, count another 50 steps and the “boat” will be in position for pipetting, etc. The system thus does not rely on a physical position tracking feature on the carrier, the position of which is detected by a sensor placed along the path of the carrier. Rather, in Karl, positioning of the boat 22 is solely dependent on counting steps of the stepper motors 48 as the boat 22 is maneuvered along the four sides of the instrument.

Conversely, the present invention is considered a more reliable improvement over the Karl patent in that it includes a positioning feature formed in the carrier itself and a sensor which detects the position of this feature directly. In the Karl patent, the determination of actual position of the “boat” based on counts of steps of a stepper motor is in fact dependent on many factors, all of which must be precisely calibrated. In particular the system of Karl requires a correct translation of “steps” into linear inches of travel, but this can be inaccurate due to play, expansion (stretching) or contraction of the

belt which is driven by the motor; moreover manufacturing tolerances or wear in the size or shape of the collar, the paddle, and the molding of the sides of the boat where the paddle engages the boat can all effect the position of the boat when the system just counts motor steps. The present invention avoids all these potential sources of error by sensing the position of the position feature of the carrier *directly* by means of a sensor.

Lastly, for the positioning feature of claim 1 the Examiner cites to the features of Karl et al. of the bar code placed on the test sample card and the bar code reader. While the Karl et al. references does disclose bar codes which are read and bar code reader (see the passage at col. 22 line 51 et seq.), these features are not used to determine the position of the carrier. Rather, as explained above, the positioning of the boat and test sample cards in position for bar code reading (or any other operation for that matter) is done by means of the counting of steps of the stepper motor 48. Bar code reading is merely to obtain patient and sample data which is correlated to bar codes. (See Karl at col. 22 lines 17-25). Bar code reading has nothing to do with actually tracking the position of the cards, or the boat 22, within the instrument of Karl et al.

Accordingly, the anticipation rejection of claims 1-4 is clearly in error and should be withdrawn.

§ 103 Rejection

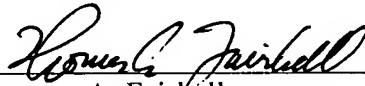
The Examiner rejected claim 5 as obvious over Karl et al. Applicants submit that the rejection should be withdrawn because Karl et al. does not disclose or suggest the position tracking features of claim 1, as explained above. Moreover, Karl et al. teaches

away from using replaceable wear strips in claim 5. In Karl et al., the entire base pan 24 across which the boat 22 slides is made of a single piece of low friction material (e.g., Delrin or ultra high molecular weight plastic) and one would have no occasion for replacing a section of the base pan. Claim 5 contemplates replaceable strips – i.e., only a strip of material is provided for providing a supporting surface of the carrier and the strip is replaceable. This is completely distinct and nonobvious from Karl et al.

Conclusion

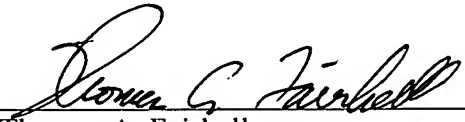
Applicant submits that the rejections should all be withdrawn and the case passed to issuance. Prompt and favorable action to that end is requested.

McDonnell Boehnen Hulbert & Berghoff LLP

Date: Sept. 6, 2007 by: 
Thomas A. Fairhall
Reg. No. 34591

Certificate of mailing

The undersigned hereby certifies that the foregoing Amendment is being deposited as first class mail, postage prepaid, in an envelope addressed to Commissioner for Patents, PO Box 1450 Alexandria VA 22313-1450 on this 6th day of September, ~~August~~, 2007.


Thomas A. Fairhall

DRAWING AMENDMENT

Please replace the informal drawings submitted on filing with the attached set of 31 sheets of replacement drawings.

Explanation of changes: There are no changes to the drawings other than having all sheets rendered in formal fashion by a draftsman.